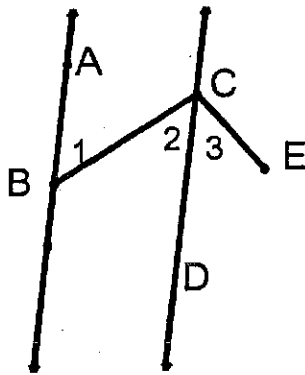


Name \_\_\_\_\_

Date \_\_\_\_\_

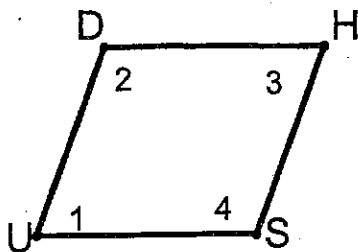
## Parallel Line proofs—202

1. Given:  $\overline{AB} \parallel \overline{CD}$   
 $\overline{CD}$  bisects  $\angle BCE$   
 Prove:  $\angle 1 \cong \angle 3$



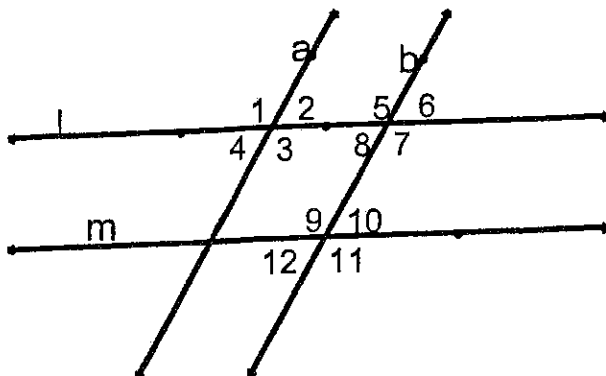
| Statements | Reasons |
|------------|---------|
|            |         |
|            |         |
|            |         |
|            |         |

2. Given:  $\overline{UD} \parallel \overline{HS}$   
 $\overline{DH} \parallel \overline{US}$   
 Prove:  $\angle 1 \cong \angle 3$



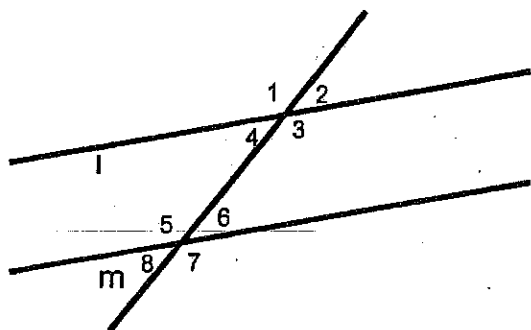
| Statements | Reasons |
|------------|---------|
|            |         |
|            |         |
|            |         |
|            |         |

3. Given:  $a \parallel b$ ;  $l \parallel m$   
 Prove:  $\angle 2 \cong \angle 12$



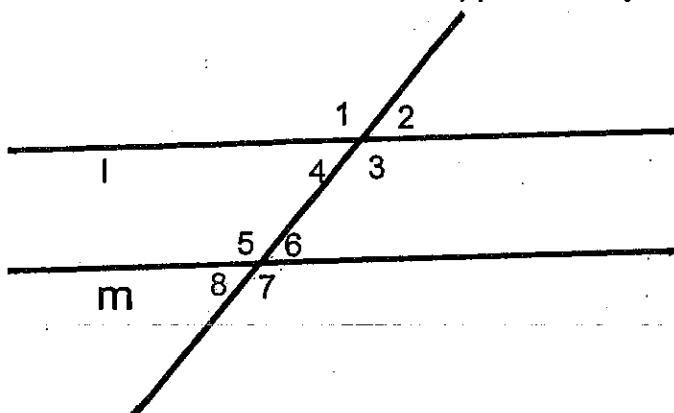
| Statements | Reasons |
|------------|---------|
|            |         |
|            |         |
|            |         |
|            |         |

4. Given:  $l \parallel m$   
 Prove:  $\angle 3$  and  $\angle 8$  are supplementary.



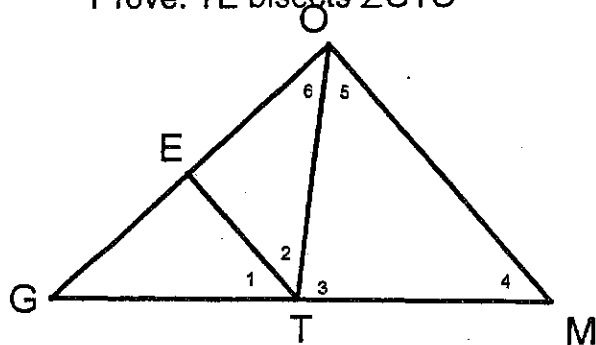
| Statements | Reasons |
|------------|---------|
|------------|---------|

5. Given:  $l \parallel m$   
 Prove:  $\angle 2$  and  $\angle 7$  are supplementary



| Statements | Reasons |
|------------|---------|
|------------|---------|

6. Given:  $\overline{ET} \parallel \overline{MO}$ ;  $m\angle 4 = m\angle 5$   
 Prove:  $\overline{TE}$  bisects  $\angle GTO$



| Statements | Reasons |
|------------|---------|
|------------|---------|

## 3-2 Study Guide and Intervention *(continued)*

### Angles and Parallel Lines

**Algebra and Angle Measures** Algebra can be used to find unknown values in angles formed by a transversal and parallel lines.

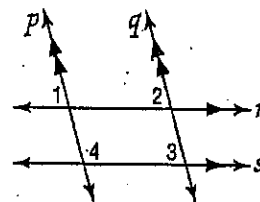
**Example** If  $m\angle 1 = 3x + 15$ ,  $m\angle 2 = 4x - 5$ ,  $m\angle 3 = 5y$ , and  $m\angle 4 = 6z + 3$ , find  $x$  and  $y$ .

$p \parallel q$ , so  $m\angle 1 = m\angle 2$   
because they are  
corresponding angles.

$$\begin{aligned} 3x + 15 &= 4x - 5 \\ 3x + 15 - 3x &= 4x - 5 - 3x \\ 15 &= x - 5 \\ 15 + 5 &= x - 5 + 5 \\ 20 &= x \end{aligned}$$

$r \parallel s$ , so  $m\angle 2 = m\angle 3$   
because they are  
corresponding angles.

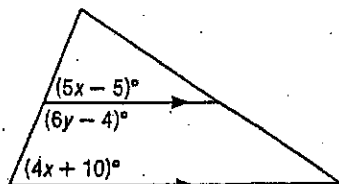
$$\begin{aligned} m\angle 2 &= m\angle 3 \\ 75 &= 5y \\ \frac{75}{5} &= \frac{5y}{5} \\ 15 &= y \end{aligned}$$



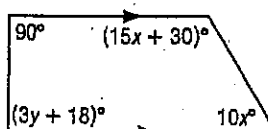
### Exercises

Find  $x$  and  $y$  in each figure.

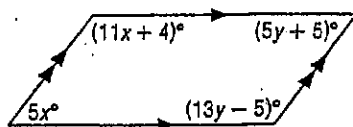
1.



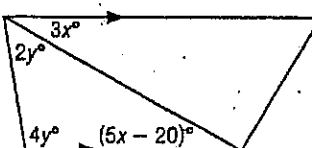
2.



3.

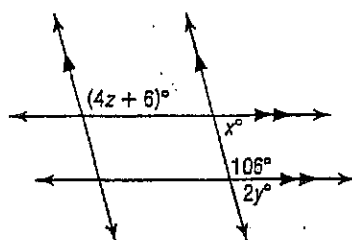


4.

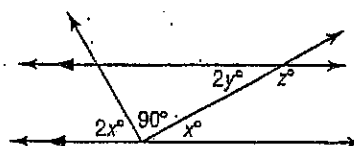


Find  $x$ ,  $y$ , and  $z$  in each figure.

5.



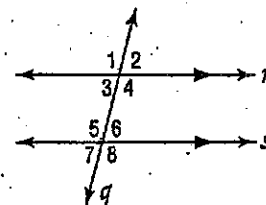
6.



# 3-2 Skills Practice Angles and Parallel Lines

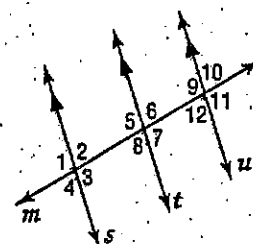
In the figure,  $m\angle 2 = 70$ . Find the measure of each angle.

1.  $\angle 3$
2.  $\angle 5$
3.  $\angle 8$
4.  $\angle 1$
5.  $\angle 4$
6.  $\angle 6$



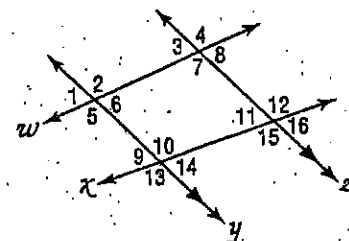
In the figure,  $m\angle 7 = 100$ . Find the measure of each angle.

7.  $\angle 9$
8.  $\angle 6$
9.  $\angle 8$
10.  $\angle 2$
11.  $\angle 5$
12.  $\angle 11$



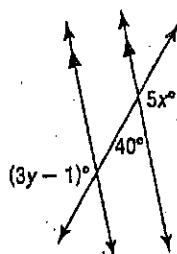
In the figure,  $m\angle 3 = 75$  and  $m\angle 10 = 115$ . Find the measure of each angle.

13.  $\angle 2$
14.  $\angle 5$
15.  $\angle 7$
16.  $\angle 15$
17.  $\angle 14$
18.  $\angle 9$

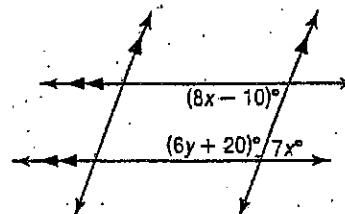


Find  $x$  and  $y$  in each figure.

19.

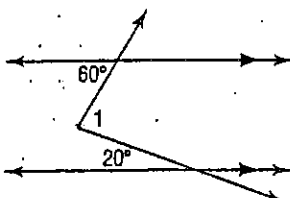


20.



Find  $m\angle 1$  in each figure.

21.



22.

